

Properties/ Bonding Review

Covalent bonding occurs when **two or more NON-METALS share electrons**, attempting to attain a stable octet (8 outer electrons) in their outer shell for at least part of the time.

a) **Draw** a Lewis dot diagram for each element listed. **Circle** each atom and the electrons that it will share b) Then **draw** the bond structure using symbols and lines. Use one line for each pair of electrons that is shared.

1.) Oxygen ----- What type of bond is this? _____

a) _____ b) _____

2.) Nitrogen ----- What type of bond is this? _____

a) _____ b) _____

3.) Boron and Fluorine

a) _____ b) _____

4.) Carbon and Hydrogen

a) _____ b) _____

IONIC BONDING:

occurs when a **METAL bonds with a NON-METAL**, electrons given up by metals and are taken by non-metals to attain a stable octet (8 outer electrons) in their outer shell giving atoms a charge (making them ions!!). These charged atoms or ions are attracted to one another by electrical attraction (positive attracted to negative/opposites attract).

a) **Draw** a Lewis dot diagram for each element listed then **show** the transfer of electrons using an **arrow**. b) **Draw** the element symbol surrounded by the electrons in their final position. These diagrams should be in brackets with the ions charge or OXIDATION NUMBER outside of the brackets.

1.) Barium (Ba) and Sulfur

a) _____ b) _____

2.) Lithium and Selenium (Se)

a) _____ b) _____

3.) Iron (+3) and Phosphorus

a) _____ b) _____

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Classify the following compounds as ionic (a metal + a nonmetal), covalent (a nonmetal + a nonmetal) or both (a compound containing a metal and a polyatomic ion)

In the other column list the number of atoms in each compound.

Type of Bond	List each atom and how many are in the compound. Follow the example below.		
1.) CaCl_2 _____	Ca = 1 Cl = 2		
2.) CO_2 _____	C=	O=	
3.) H_2O _____	H=	O=	
4.) $\text{Sr}_3(\text{PO}_4)_2$ _____	Sr=	P=	O=
5.) K_2O _____	K=	O=	
6.) NaF _____	Na=	F=	
7.) $\text{Al}_2(\text{CO}_3)_3$ _____	Al=	C=	O=
8.) CH_4 _____	C=	H=	

Ionic or covalent (you may need to look up to formulas if you can't make a decision based on the properties):

- 1.) Baking Soda _____
- 2.) Glass _____
- 3.) Butter _____
- 4.) Gasoline _____
- 5.) Chalk _____

What is a valance electron?

What is an oxidation number?

What is the oxidation number for:

- | | |
|-----------------------|-------------------------|
| 1.) Argon _____ | 4.) Polonium (Po) _____ |
| 2.) Sodium _____ | 5.) Tin _____ |
| 3.) Radium (Ra) _____ | 6.) Arsenic (As) _____ |

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What is a metallic bond? What property of matter is reliant on these metallic bonds?

Most metals are in what state at room temperature? (solid, liquid or gas)

What is the only metal that is a liquid at room temperature?

What state are most non-metals in at room temperature?

What state are all ionic compounds in at room temperature?

What makes period 7 so unique?

Fill in the table:

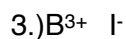
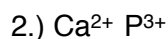
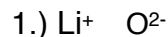
Group Number	Group Name	# Valence Electrons	Will it GAIN or LOSE electrons to fill its outer shell?	Charge of the Ion
1	Alkali Metals			
2				
3				
4				
5				
6				
7				
8				

True or False (correct if false):

- 1.) T or F Ductility refers to a metals ability to be hammered into sheets.
- 2.) T or F Malleability refers to a metals ability to bend without breaking or to be hammered out into sheets.
- 3.) T or F A salt is a combination of a non-metal and an atom from the halogen family
- 4.) T or F Iodine is essential for the function of the thyroid
- 5.) T or F Alkaline earth metals are the most reactive elements on the periodic table
- 6.) T or F Transition elements can have multiple oxidation numbers

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1.) Sodium and Iodide

2.) Aluminum and Antimony (Sb)

3.) Beryllium and oxygen

4.) Boron and Sulfur

5.) Hydrogen and Oxygen

6.) Chlorine and Chlorine

7.) Sulfur and Bromine

Be sure to review your notes, the properties packet, the web quest, the activities we have done and any homework assignments or extra practice worksheets!

Some of you really need these points - be proactive and STUDY STUDY STUDY!